

Notice of Allowability

Application No.

10/060,167

Examiner

Kelly L. Jerabek

Applicant(s)

MIZUNO ET AL.

Art Unit

2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Application filed 2/1/2002.
2. ☒ The allowed claim(s) is/are 1-4.
3. ☒ The drawings filed on 01 February 2002 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 11/20/02; 6/17/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Allowable Subject Matter

Claims 1-4 allowed.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fail to anticipate or render obvious the following technical features as recited in the highlighted claims:

Re claim 1, the prior art fails to teach or suggest " A solid-state imaging device having an A/D conversion circuit to which output signals from a plurality of circuit arrays are sequentially input, characterized in that each of the circuit arrays comprises a photodetector, and a comparison circuit which receives a signal corresponding to an output from the photodetector and a monotonically increasing voltage, and outputs a coincidence signal representing a timing when the signal and voltage coincide, a final coincidence determination circuit which receives a plurality of coincidence signals output from said comparison circuits and outputs a final coincidence signal representing a latest of timings represented by the coincidence signals, and an A/D conversion range of the A/D conversion circuit is set in accordance with a value of the monotonically increasing voltage when the final coincidence signal is output".

Re claims 2-4, the prior art fails to teach or suggest " A solid-state imaging device characterized by comprising: N photodetectorsN integration circuits ...N CDS circuits ...N difference arithmetic circuits ...N S-H circuits ...a reference signal voltage generation circuit which outputs a reference signal voltage having a monotonically increasing value...N comparison circuits ...a final coincidence determination circuit... a reference voltage hold circuit...an A/D conversion circuit...".

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mizuno (US 6,606,123) discloses a photosensitive device. The information regarding an A/D conversion circuit and setting an A/D conversion range is relevant material.

Mizuno et al. (US 6,597,007) discloses an optical position detection device and distance measurement device. The information regarding an A/D conversion circuit is relevant material.

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Mizuno (US 6,757,627) discloses a photo-detecting apparatus. The information regarding an A/D conversion circuit is relevant material.

Mizuno et al. (US 6,642,501) discloses a photo-detecting apparatus. The information regarding an A/D conversion circuit is relevant material.

Street (US 5,831,258) discloses a pixel circuit with an integrated amplifier. The information regarding a photosensor including an integrating circuit is relevant material.

Uno (US 5,619,262) discloses a solid-state image pickup apparatus including a unit cell array. The information regarding a photosensor including an integrating circuit is relevant material.

Okumura (US 5,479,208) discloses image sensors and a method of driving image sensors. The information regarding a photosensor including an integrating circuit is relevant material.

Yamamoto et al. (US 6,002,435) discloses a solid-state imaging apparatus. The information regarding a photosensor including an integrating circuit is relevant material.

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Fouilloy et al. (US 5,387,933) discloses a detector-fitted camera provided with electronic protection. The information regarding a photosensor including an integrating circuit is relevant material.

Contacts

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly L. Jerabek whose telephone number is **(571) 272-7312**. The examiner can normally be reached on Monday - Friday (8:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on **(571) 272-7308**. The fax phone number for submitting all Official communications is 703-872-9306. The fax phone number for submitting informal communications such as drafts, proposed amendments, etc., may be faxed directly to the Examiner at **(571) 273-7312**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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